UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,341	10/15/2001	Takashi Terauchi	50090-449	9211

7590 07/31/2002

McDermott, Will & Emery
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER
POMPEY, RON EVERETT

ART UNIT	PAPER NUMBER
2812	7

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/976,341	Applicant(s) TERAUCHI ET AL.
	Examiner Ron E Pompey	Art Unit 2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *15-20* is/are withdrawn from consideration.

5)☒ Claim(s) *1-5* is/are allowed.

6)☒ Claim(s) *6,7 and 10-14* is/are rejected.

7)☐ Claim(s) *8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang (US 5,654,212) in further view of Cunningham (US 6,208,004).

Jang discloses the limitations of:

For claims 6 and 11:

forming gate interconnections (435, fig. 4B) on the gate oxide film, each gate interconnection including a first silicon film and a dielectric film;

forming a first diffusion layer (445, fig. 4B) by means of implanting an impurity in the substrate;

forming after formation of the first diffusion layer, a second silicon film (455, fig. 4C) over the side surfaces of the first silicon film; and

thermally oxidizing the second silicon film (465, fig. 4F) (col. 6, ln. 19 – col. 7, ln. 34).

Jang discloses the limitations of 6, 7, 10 and 11, except for what Cunningham discloses which is:

wherein each of the gate interconnections includes a silicide film (110, fig. 1) interposed between the first silicon film (106, fig. 1) and the dielectric film (112, fig. 1),

the second silicon film (114 a, b, fig. 1) covers side surfaces of the first silicon film and those of the silicide;

forming a second diffusion layer (130 a, b, fig. 2) which is higher in impurity concentration than the first diffusion layer; and

forming an interlayer dielectric layer (fig. 4a) (col. 6, lns. 6 – 45).

Therefore one of ordinary skill in the art would combine Jang and Cunningham because the silicide reduces the resistivty of the gate structure and the interlayer will protect the device during later metalization processes.

3. Jang and Cunningham disclose all the limitations of claims 8, 9, 12, 13 and 14 except for the temperature range and the range of second silicon layer is oxidized. However has been held that discovering an optimum or working range involves only routine skill in the art.

Allowable Subject Matter

4. Claims 1-5 are allowed.

5. Claims 8 and 9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose wherein the second oxide covers the entire interconnects and wherein the second silicon is made of polysilicon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ron E Pompey whose telephone number is (703) 305-3016. The examiner can normally be reached on flex schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Ron Pompey
Art Unit: 2812
July 29, 2002

John F. Niebling
Supervisory Patent Examiner
Technology Center 2800